

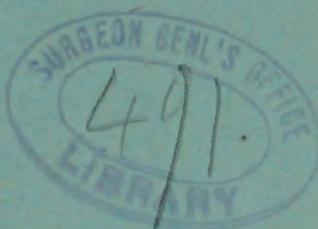
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With Report of a Case.

BY

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FROM
THE MEDICAL NEWS,

June 24, 1893.

[Reprinted from THE MEDICAL NEWS, June 24, 1893.]

COUGH OF NASAL ORIGIN, WITH REPORT OF A CASE.

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COUGH is, to a certain extent, a purely physiologic phenomenon, intended to support and supplement the action of the ciliated epithelial cells lining the respiratory tract. It is the function of these cells to keep up a current in the direction from the central organs of respiration—the lungs—toward the periphery, in order to remove the mucus secreted in the respiratory tract, and with it those mechanical adulterations, including pathogenic and non-pathogenic microorganisms, suspended in the surrounding air, that have gained access to the respiratory tract below the larynx by not having been effectually excluded by those organs especially equipped to do this, namely, the nasal cavities and the nasopharynx.

The act of coughing is considered physiologically as a modified expiration, brought about by reflex stimuli acting upon the pneumogastric nerve, more especially upon its branch, the superior laryngeal. The pneumogastric nerve is to be looked upon as the guardian of the lower parts of the respiratory tract, and, as such, has to prevent detrimental elements from gaining access to the lungs, or to remove



by reflex action those that have already gained access.

The act of coughing usually begins with a deep inspiration; then follows an expiration, which is, however, obstructed, in consequence of the approximation of the vocal bands as tightly as possible (more completely than in phonation), by the adductor muscles of the larynx. At the same time the abdominal muscles force up the contents of the abdominal cavity and the diaphragm, which itself contracts; and the air in the alveoli, bronchi, and trachea, which cannot escape through the tightly-closed rima glottidis, is brought under a comparatively high pressure. Finally, the vocal bands relax, the air escapes forcibly, and its current, as it sweeps over the respiratory tract, carries along a certain amount of mucus and particles suspended in it, and, with the assistance of the muscles of the pharynx, etc., delivers it to the outside world.

In perfect health, and when surrounded by pure air, cough plays an insignificant rôle, very much subordinate to such physiologic processes as, *e. g.*, the act of micturition or that of evacuating the contents of the intestines. In many diseases, however, as, for instance, in croupous pneumonia, cough is the most important factor in ridding the alveoli and bronchioles of the pathologic products of disease. While a cough of this kind may be styled a necessary and beneficial reflex phenomenon, there are certain kinds of cough that are, from a physiologic as well as a pathologic point of view, of an absolutely useless character, dependent upon a reflex from a distant point, an irritation that, *de facto*,

does not interfere, either sufficiently or not at all, with the act of respiration, and, therefore, cannot be favorably influenced by cough. Cases have been reported of cough of reflex origin from the liver and spleen (Naunyn), from the stomach and vesica urinæ (Krimer), from the external integument of the thorax (Leyden), from any and every part of the integument (Strubing), from the transmission of ordinary stimuli to the nerves of special sense (Ebstein)¹.

During the last ten years it has been generally recognized that the nose is among those organs that may give rise to most obstinate cough of reflex origin. That pathologic changes in the nasal cavities constitute one of the most fruitful sources of various reflex phenomena is a fact that has been recognized for some time. The first, however, to mention this more elaborately and to lay especial stress upon it was Voltolini,² whose views were afterward confirmed by reports of cases by B. Fraenkel, Hænisch, A. Hartmann, M. Schaeffer, Bresgen, J. Herzog, and especially Hack,³ who reported a number of instances and advanced a theory in explanation of reflexes of nasal origin. While the theory of Hack has been almost completely abandoned, he may still claim the merit that his paper was the most complete and most extensive on the subject up to his time. Among Hack's cases of reflex neuroses of nasal origin was also one of reflex cough dependent upon the presence of a nasal fibroid poly-

¹ Quoted in Gottstein, *Die Krankheiten des Kehlkopfes*, 1890.

² Voltolini: *Anwendung der Galvanokaustik, etc.*, Wien, 1871.

³ Hack: *Berl. klin. Wochenschr.*, 1882.

pus. Carl Seiler¹ followed with the report of two cases of reflex cough of nasal origin. John N. Mackenzie² next recorded his experiences on the subject. Thrasher³ reported two cases before the meeting of the Mississippi Valley Medical Association, at Louisville, in 1890. One case is also reported by Scheinmann,⁴ who tabulates and reports thirty-two cases of reflex neuroses of nasal origin occurring at the Throat and Nose Clinic of the University of Berlin, and whose extensive paper is undoubtedly the best contribution upon the subject which has appeared during recent years. Whether F. C. Heath, who contributes a paper on "Nasal Reflexes," in the *American Lancet*, Detroit, 1891, reports any new cases of reflex cough of nasal origin I am unable to state, as his paper has not been accessible to me.

Many of the authors who have written upon the subject of reflex neuroses of nasal origin point out the fact that it is almost universally in patients of a neurotic taint that these neuroses develop. Under some conditions the nasal cavities may show extensive pathologic changes; there may be new growths and points and surfaces compressing each other, without the appearance of any reflex phenomena. On the other hand, in individuals of anemic and neurasthenic type, slight changes, small areas of

¹ Archives of Laryngology, vol. iii.

² Amer. Journ. Med. Sci., July, 1883.

³ Cincinnati Lancet-Clinic, October 11, 1890.

⁴ Scheinmann: "Zur Diagnose und Therapie der Nasen Reflex-neurosen," Berl. klin. Wochenschr., 1889, pp. 295, 327, 399, 425, 471.

contact may bring about serious reflex disturbances. Some authors go as far as to maintain that no changes in the cavum narium of the kind usually producing reflex neuroses will do so unless developed upon the soil of an already disturbed nervous equilibrium.

If the normal nasal mucous membrane of an individual in perfect health, at the time not the subject of cough, and not accustomed to a prolonged course of nasal treatment, be gently irritated by a nasal sound, one will almost universally notice a twitching of the facial muscles of the side touched, a dilatation of the vessels of the nasal mucous membrane, and epiphora. If the irritation be more intense (such as may be caused by a weak electric current), sneezing, and, very often in nervous individuals, coughing will be excited. This observation is in favor of the claim of those who maintain that reflex neuroses of nasal origin only or almost universally develop on a neurotic soil. The case here-with reported may also be cited in support of this view :

M. B., an unmarried girl, twenty-one years old, of good family history, was said to have had "curvature of the spine" when she was four or five years old, for which she was treated, and got well. She suffered occasionally with pain in the back. For two or three years she had had a constant cough with a feeling of irritation and a sensation of the presence of a foreign body in the throat, of which she wanted to get rid. All treatment directed against the cough had failed to benefit her and ameliorate the constant irritation. The patient also stated that she sometimes had pain in swallow-

ing, and had been told that she breathed through her mouth during sleep, though she did not snore. The sense of smell had always been good.

The girl was small and slender, looking less than her years. She limped slightly in walking, in consequence of a deformity of the spinal column in the lumbar region (probably a scoliosis—no direct examination of the spine having been made), and was anemic, restless, and nervous.

The nasal mucous membrane was rather pale and anemic, and in a few discrete spots appeared atrophic. In the left nasal cavity, about three centimeters behind the anterior nares, close to the floor, was a mucous band, connecting the lower turbinated bone with the septum, stretching across and largely obliterating the inferior meatus. This band was from 3 mm. (at its middle part) to 5 mm. (at the two points of attachment) wide and of the same color as the neighboring parts. On the right side the mucous membrane of the lower turbinated bone showed some hypertrophy. The posterior extremity of this structure also showed a slight amount of thickening. Tenacious mucus covered the roof of the naso pharynx. The pharyngeal mucous membrane was granular; on either side two granular bands extended from the plicæ salpingopharyngeæ downward; the band on the right side being especially well marked. Both tonsils were somewhat hypertrophic, the right one especially so. The epiglottis was imbedded in a hypertrophic lingual tonsil; the larynx was otherwise normal.

A diagnosis was made of adhesion in the left inferior nasal meatus, with chronic granular and lateral pharyngitis, and hypertrophy of the pharyngeal and lingual tonsils.

In view of the numerous hypertrophies found in the pharynx, it seemed justifiable to consider them

as the cause of the cough, and they were consequently treated topically for a long time. The band of adhesion in the left nasal cavity was, on account of its situation and color, readily overlooked, and was only discovered when the patient came to my clinic. Touching the mucous band connecting the lower turbinated bone with the septum did not excite a fit of coughing. This observation did not, however, at all influence me in my belief that in the adhesion I had found the cause of the reflex cough. It has frequently been noticed that pathologic changes in the nose act as the cause of reflex neuroses that disappear after proper surgical interference or other therapeutic measures, even if, on touching these structures or tender points, as the case may be, the reflex is not always excited. The result of such interference in the case reported in this paper proved the correctness of the assumption.

Two days after the examination the lower parts of the left nasal cavity were treated with a ten per cent. solution of cocaine, and the band of adhesion, which now appeared very much on the stretch, was divided by a galvano-cautery platinum knife. No pain was experienced, and no hemorrhage followed. Insufflation of europheen was practised after the operation.

On the following day the patient reported that the cough had disappeared completely. The good effect continued. A ferruginous tonic was prescribed, but the pharynx was not touched.

The nasal mucous membrane at the points of cauterization healed kindly; the cough did not reappear.

The patient, after taking iron for some time, felt better than she had for years. She looked well, had gained in weight, and her cheeks presented a rosy color. The hypertrophies of the pharynx still per-

sisted, as they had not been interfered with surgically. The cough, which had left the patient directly after the operation, had not reappeared.

The case is instructive not only as one of cough of nasal origin, but also because it shows that hypertrophies in the pharynx, which often give rise to reflex symptoms, may not do so, even in a nervous subject in whom structural changes (in our case an obstructive adhesion) in the nose will do so.

In conclusion, I would like to state that it is my belief that the adhesive band in this case originated from ordinary hypertrophies, such as are found in almost every case of rhinitis hypertrophica. Probably a point of contact was established between the mucous membrane of the turbinated bone and that of the septum, a slight ulceration occurred in consequence of the hypersecretion dependent upon the hypertrophy, and the adhesion was formed at the point where two ulcerated surfaces were in contact. Later on the hypertrophy underwent a retrograde change (there being, already, spots of a somewhat atrophic character noticeable at the time the patient presented herself), and the mucous membrane contracted, but left behind a band of adhesion at the place that formerly had been a point of contact, the band acting as a source of reflex cough.

The Medical News.

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